

USER'S GUIDE

Mini Bluetooth DBT-268



Sintrade AG
Kriesbachstrasse 30
CH-8600 Dübendorf
www.sintrade.ch
gps@sintrade.ch

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1. Introduction

1.1 Overview

The **DBT-268** Bluetooth GPS receiver incorporates a wireless Bluetooth radio module, a high performance SiRF StarIII GPS chipset, and a rechargeable battery in a compact design. The SiRF StarIII chipset is with extremely high sensitivity for GPS signal acquisition and tracking. This Bluetooth GPS receiver allows you to receive GPS data on mobile hand-held devices. By sending the GPS data wirelessly, you may place this receiver on a position with best signal reception without the constraint of annoying wires. The receiver is equipped with portable, rechargeable, with removable battery, just like a mobile phone. The only requirement is your corresponding hand-held device is also with the Bluetooth connection capability. The receiver is positioning for broad applications such as vehicle navigation, mapping, surveying, security, agriculture..., etc. Only a clear view of sky and a battery power are necessary to the unit. With its low power consumption, the receiver tracks up to 20 satellites at a time while offering fast time-to-first-fix (TTFF), reacquires satellite signals in 100 milliseconds (averaged) and updates position data every second.

1.2 Features

The **DBT-268** provides a host of features that make it easy for system integration and convenient for users using PDA, Notebook PC with Bluetooth device.

1. With SiRF StarIII high sensitivity and low power consumption chipset.
2. 20 parallel satellite-tracking channels for fast acquisition and reacquisition
3. High speed signal acquisition using 200,000 time/frequency search channels.
4. Built-in WAAS/EGNOS demodulator without additional hardware.
5. With the highly sensitive software to get the fast acquisition and reacquisition in the urban, canyon and foliage environments.
6. Equipped with 1200 mAh Li-ion rechargeable battery for long operating hours.
7. Over temperature protection for the battery.
8. Compatible with Bluetooth devices with Serial Port Profile (SPP).
9. With an internal built-in antenna, and also provides a connector for accessing external active antenna.
10. Three LEDs show Bluetooth, GPS, and battery status.
11. Supports standard NMEA-0183 data protocol and SiRF binary code at 38400 baud rate.
12. Built-in rechargeable battery for memory and RTC backup and for fast TTFF.
13. Flash-based program memory, new software revisions upgradeable through serial interface.
14. Compact, sleek, and lightweight enclosure design.

1.3 Electrical Characteristics

General

Frequency	L1, 1575.42 MHz
C/A code	1.023 MHz chip rate
Channels	20 channels all-in-view tracking
Antenna	internal

Sensitivity

Tracking	-159 dBm typical
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Accuracy

Position	Normal: 5~25 meters CEP without SA Enable EGNOS or WAAS: Position < 2.2 meters, horizontal 95% of time < 5 meters, vertical 95% of time
Velocity	0.1 meters/second
Time	1 microsecond synchronized to GPS time

Datum

Default	WGS-84
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Limitation

Altitude	< 18,000 meters (60,000 feet)
Velocity	< 515 meters/sec (1000 knots)
Acceleration	< 4 G
Jerk	20 meters/sec max.

Acquisition Rate

Hot start	< 1 sec, averaged (with ephemeris and almanac valid)
Warm start	< 38 sec, averaged (with ephemeris but not almanac)
Cold start	< 42 sec, averaged (neither ephemeris nor almanac)
Re-acquisition	0.1 sec. (interruption recovery time)

GPS protocol

Protocol message	NMEA-0183
Default NMEA	GGA, GSA, GSV, RMC, 38400 baud rate, (VTG, GLL, and RMS optional) 8 bits data, 1 stop bit, no parity.

Bluetooth Characteristics

BT Compliant	Version 1.1
RF Tx Power	Class 2 (4 dBm max)
Receiver sensitivity	-80 dBm with BER<0.1%
Communication distance	10 meter typically
Communication profile	Serial Port Profile (SPP)

Power Consumption

Main power input	5V DC input.
Main power input	3.3 ±5% VDC from internal Lithium-ion battery pack
Operation Current	75~85 mA total typical in normal mode

Battery

Source	Rechargeable and removable 1200 mAh Lithium-Ion battery with 5V DC input charging circuit
Charging time	Full charge 2.5 hours typical
Operation time	10 hours after fully charged in continuous tracking mode

Environmental Characteristics

Operating temperature range	-10 °C to +60 °C (un-charging condition)
Storage temperature range	-20 °C to +85 °C
Charging temperature range	0 °C to +45 °C
Operating humidity :	5% to 95%, no condensing

2. Hardware

2.1 Dimension

The **DBT-268** Bluetooth GPS receiver is with the dimension 75 mm (L) x 44 mm (W) x 20.7 mm (H) and the weight is less than 75 grams.

2.2 Packing List

Your **DBT-268** package includes following items. If any of these items is missing, please contact your local dealer or distributor.

- 1, One DBT-268 Wireless Bluetooth GPS receiver.
- 2, One Lithium-ion 1200 mAh rechargeable battery.
- 3, One set of travel/car charger.
- 4, One Quick Installation Guide.
- 5, One tool CD (with user's manual inside).
- 6, One warranty card.



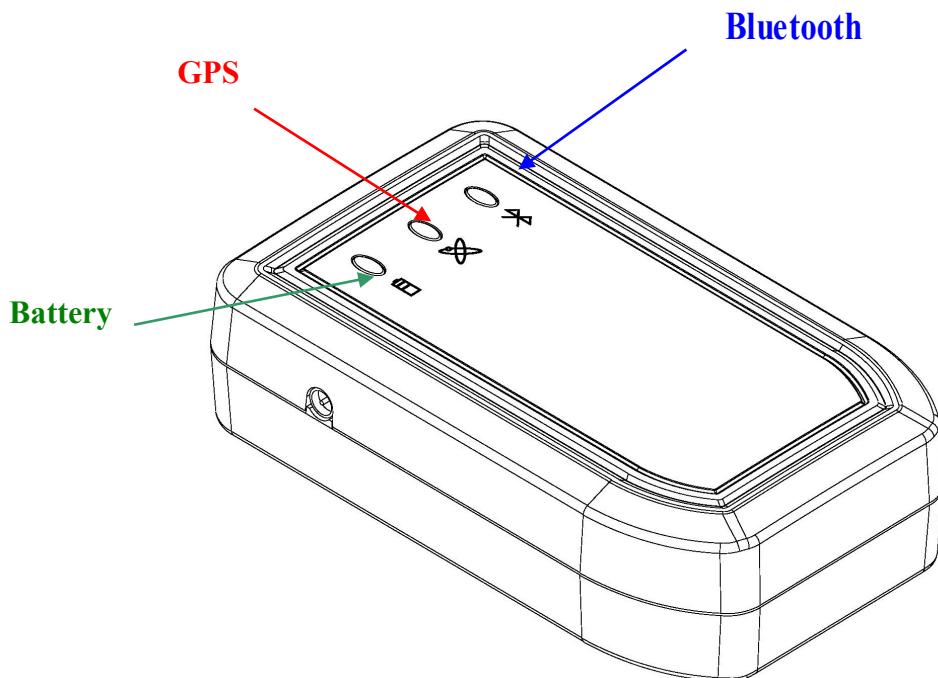
2.3 Description

- 1, Body of the Bluetooth GPS unit is as shown in the figure.



There are three LED windows on the front cover to indicate the GPS, Bluetooth and battery status. Detailed LED indications are described in next paragraph. The battery on/off switch is located on the top side of the enclosure while the MMCX connector for external antenna is on the broadside. The mini USB port for battery charge is also on the top side of the body.

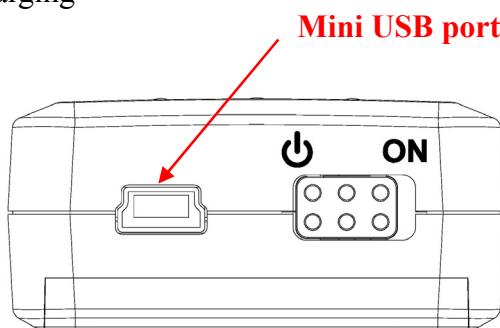
2, LED status



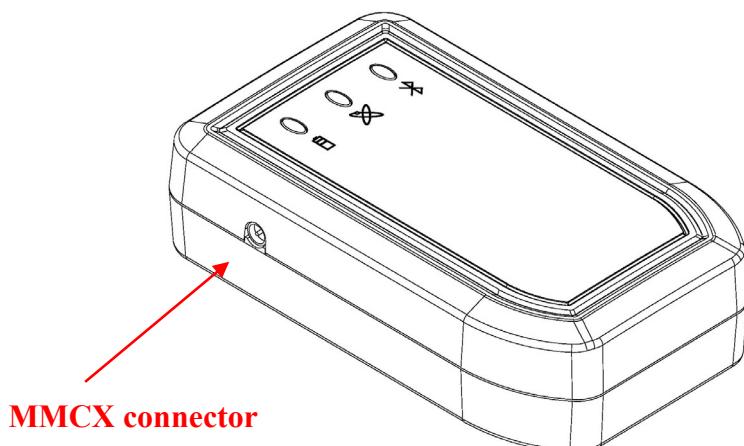
Symbol	Color	State		Indication
 Bluetooth	Blue	Twinkling	3 sec period	Standby Mode
			0.2 sec period	Pairable Mode
			1 sec period	Active link
 GPS	Red	Stay on		Initiating Process
		Twinkling	1 sec period	Receiving data
 Battery	Green	Twinkling		Recharge suspended
		Stay on		In charging
	Red	Twinkling		Battery low
		Off		Full/ or not in charge

** Unplug the power plug and wait for a moment to resume charging.

3, Mini USB port for charging



4, MMCX connector for external antenna

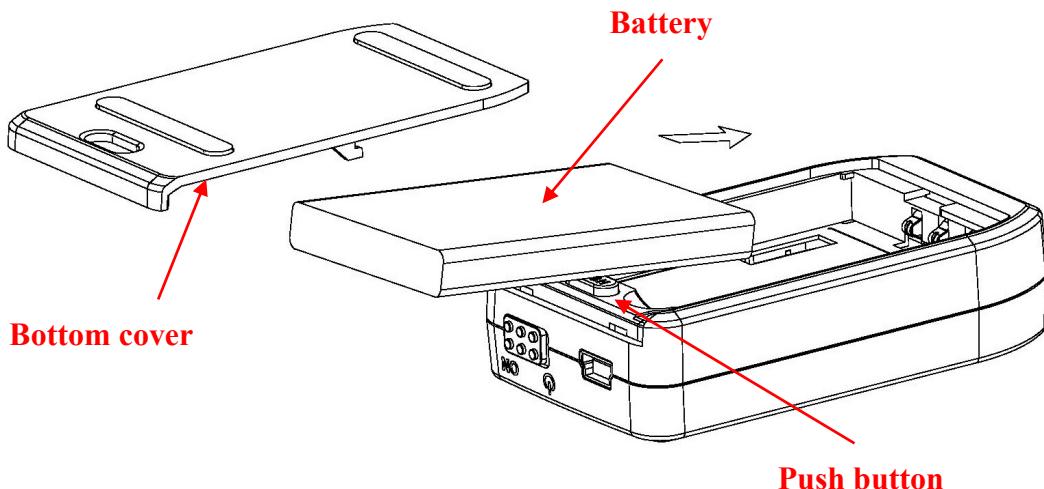


3. Operation

3.1 Getting Start

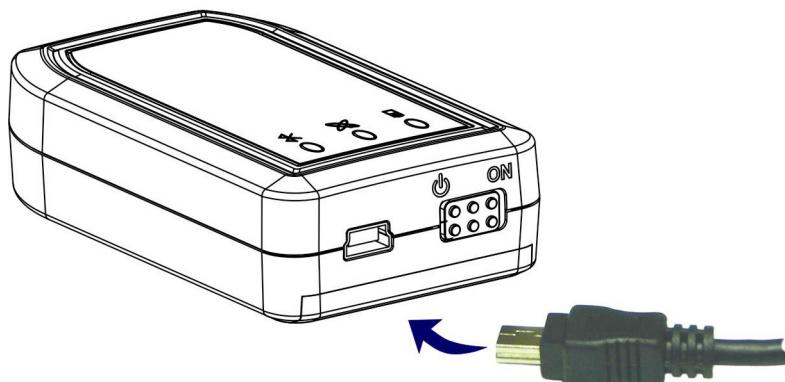
Step 1: Battery Installation

- (a) Slide the power switch to “off” position.
- (b) Press the “PUSH” button then slide the bottom cover off.
- (c) Insert the Li-ion battery into the compartment. Note the orientation of the battery.
- (d) Slide the bottom cover back to locked condition.



Step 2: Charge

Please charge the battery to full capacity when first time to use. Connect the attached adaptor cord to the mini USB jack (Please note that this port is for charge purpose only, not for data link), as shown in the following figure.



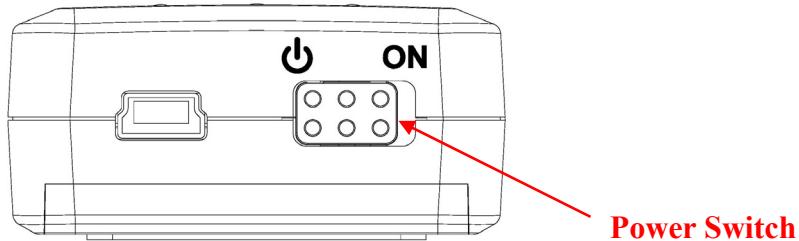
The battery indication is with dual-color LEDs. The **green LED** will be on until charge completes. The LED indication for the battery status is described in the following.

DIKOM® DBT-268 Bluetooth GPS Receiver User's Guide

Battery low -----	Red LED flashing
Battery in charging -----	Green LED steady on
Battery charging suspended (protection when charge timer over or battery overheat) -----	Green LED flashing
Charge completes or battery in normal capacity -----	both LEDs off

Step 3: GPS acquisition

Turn the power switch “on.” The slide switch is on the top side of the body. Once the power is turned on, both the Bluetooth and GPS indication LEDs start to flash.



Take the BT GPS to places with clear view of the sky. The **Red LED** indicates the status.

- (a) LED steady on when power is connected and for the initial acquisition process;
- (b) LED flashes at 1 second period when the receiver outputs position fix data.

Step 4: Wireless Link

Turn on the host device, a PDA or a NB with Bluetooth function. Then execute Bluetooth manager program to perform “search” and “pair” procedures. The default PIN code is “**0000**” for host devices to access this BT GPS unit (in paired mode).

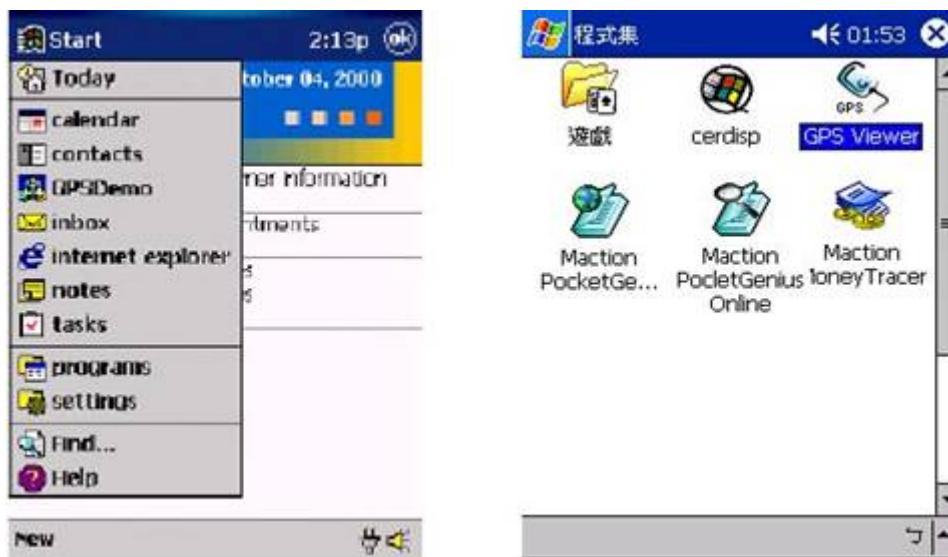
The **Blue LED** indicates following Bluetooth radio status.

- (a) LED flashes at 3 seconds interval for standby mode;
- (b) LED flashes at 0.2 second interval for pairable mode;
- (c) LED flashes at 1 second interval if there is an active RF link.

3.2 GPS Viewer for Testing

Install a GPS viewer program to host device. You may check the status of the GPS receiver whenever you like to.

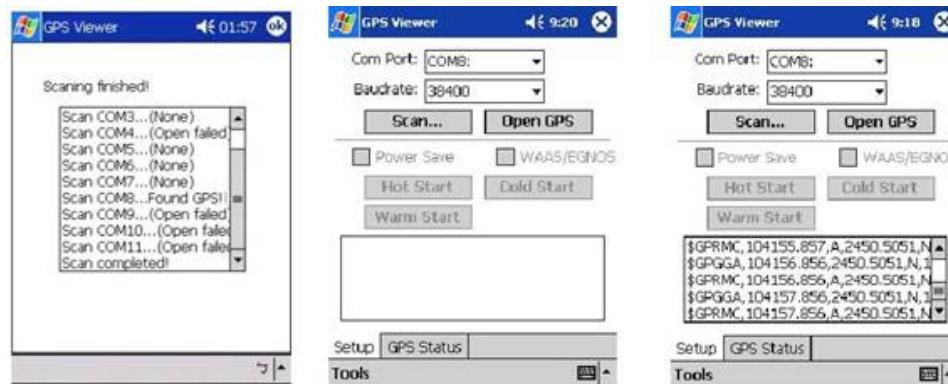
- (a) Open GpsViewer on your PPC .



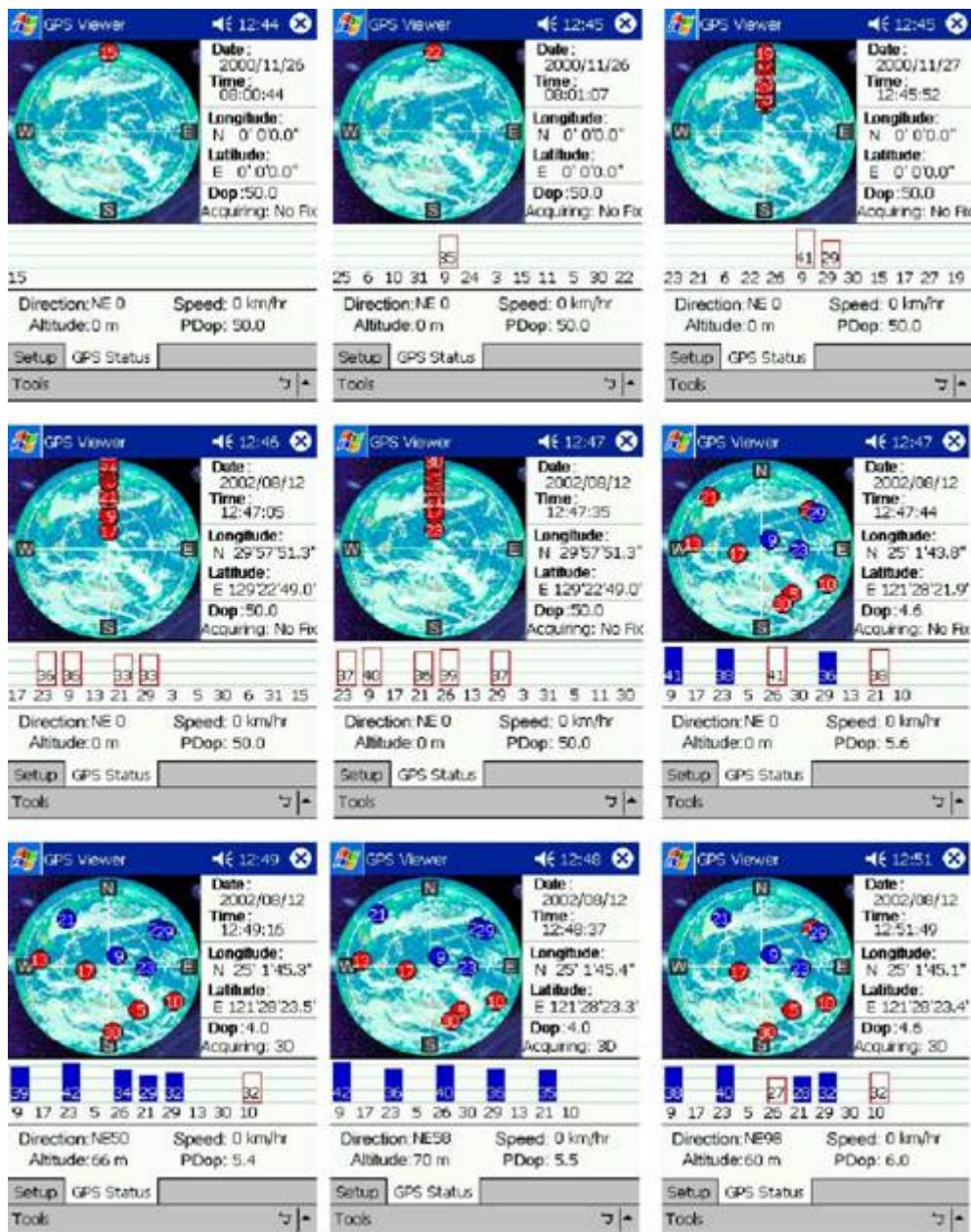
(b) The following window is shown after executing:



(c) Setup Baudrate to 38400, then push “SCAN”to scan“COM” port. Select COM port, then push“OPEN GPS”.



(d) Select “GPS status” to show the satellite diagram like below.



3.3 Function

As soon as the power on, the DBT-268 BT GPS receiver begins the process of satellite acquisition, tracking, and Bluetooth radio connection. Under normal circumstances, it takes around 42 seconds (averaged) to achieve a position fix at the first time, 38 seconds (averaged) if ephemeris data is known. After a position fix has been calculated, information about valid position, velocity, and time is transmitted over the output channel. The DBT-268 Bluetooth GPS receiver utilizes initial data, such as last stored position, date, time and satellite orbital data, to achieve maximum acquisition performance.

3.4 Navigation

After the acquisition process is complete, the DBT-268 Bluetooth GPS receiver sends valid navigation information over output channels. These data include:

- 1) Latitude/longitude/altitude
- 2) Velocity
- 3) Date/time
- 4) Error estimates
- 5) Satellite and receiver status

4. Warranty

The GPS smart receiver is warranted to be free from defects in material and functions for 1 year from the date of purchase. Any failure of this product within this period under normal conditions will be replaced at no charge to the customers.

5. Troubleshooting

Problems	Reasons	Methods
No GPS position output but timer is running	Weak or no GPS signal received at the place of DBT-268.	1, Go outdoors; or 2, Go to a place without building or foliage blocking; or 3, Connect an external antenna located at an open space to your DBT-268.
Wireless connection fail	Bluetooth function unstable	1, Power on/off DBT-268; or 2, Re-start Host device and re-install Bluetooth software.
Can not turn the COM port on	DBT-268 inappropriately installed or other device is using the same COM port	1, Stop other device that is being used; or 2, Re-install DBT-268 appropriately.
Host device can not find DBT-268	Poor connection	1, Re-start Host device and re-install Bluetooth software; or 2, Power on/off DBT-268.
No Signal	Host device may enter a power saving mode and close the COM port if no actions taken on the device for a moment.	Close the application and execute it again to reopen the COM port.
	Weak or no GPS signal when using DBT-268 indoor	Connect an external antenna to your DBT-268.

Sintrade AG
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